CLAIMS:

1. A method of producing an interpenetrating polymer network comprising the steps of:

forming a first solution of a biocompatible, hydrophilic first component selected from the group consisting of a biopolymer, a synthetic polymer and monomers and prepolymers of said biopolymer and synthetic polymer;

allowing said first solution of said first component to age for an extended period of time;

forming a second solution of aged first component and monomers and prepolymers of said biopolymer and synthetic polymer, and a second component selected from the group consisting of a biocompatible elastomer and monomers and prepolymers thereof in a common solvent; and

forming a film, fiber, bead or mesh from the second solution.

2. The method of claim 1, wherein a hydrophilic polymer and an elastomer selected from the group consisting of silicone, polyurethane and a modified polyurethane are dissolved in a common solvent to form a solution; cross-linking of at least one of the components is initiated, and the resulting resin solution is shaped to form a film or fiber.

3. The method of claim 2, wherein the resulting solution is shaped to form a three-dimensional open mesh.

4. The method of claim 2, wherein the first component is selected from the group consisting of a polyvinyl alcohol, polyhydroxymethacrylate, polyethylene oxides, acrylamides, hydrophobically modified hydrogels, collagen, gelatin, fibronectin, cellulose, hydroxypropyl cellulose, hydroxypropylmethyl cellulose, methyl

cellulose, ethyl cellulose, carboxymethyl cellulose, carboxyethyl cellulose, modified gelatin, alginate and oxidized cellulose, and the second component is selected from the group consisting of polyurethane-polydimethylsiloxane copolymers, vinyl containing siloxanes, polymethylhydrosiloxanes, polyethylene-polyvinylacetate, polypropylene oxide, polytetramethylene oxide, polytetrafluoroethylene, polystyrene and HydroThane.

5. The method of claim 1 wherein the solution of the first component is heated during aging.

6. The method of claim 1 including the step of freeze-drying the film, fiber, bead or mesh to increase the mechanical strength thereof.

7. The method of claim 1, wherein the first component is gelatin and the second component is HydroThane.

8. The method of claim 7, wherein gelatin is subjected to methacrylation to produce methacrylated gelatin; the methacrylated gelatin and HydroThane are dissolved in a common solvent to form a solution; and the solution is UV-irradiated to effect cross-linking, whereby a methacrylated gelatin-HydroThane interpenetrating polymer network is produced.

9. The method of claim 8, wherein the methacrylated gelatin is aged for 1 to 8 weeks before being dissolved with HydroThane in a common solvent.

10. The method of claim 8, wherein the methacrylated gelatin is aged for 4 to 8 weeks before being dissolved with HydroThane in a common solvent.

11. The method of claim 9, wherein a solution of the methacrylated gelatin is heated during aging.

12. The method of claim 11, wherein the solution of methacrylated gelatin is heated at 50°C for at least 3 to 24 days before being mixed with a solution of HydroThane.

13. The method of claim 9, wherein methacrylated gelatin-HydroThane interpenetrating polymer network is freeze-dried to increase the mechanical strength of the polymer network.

14. The method of claim 9, wherein the methacrylated gelatin-HydroThane interpenetrating polymer network is formed into a film, and the film is freeze dried at -70°C, whereby the mechanical strength of the film is increased.

15. A method of producing an interpenetrating polymer network comprising the steps of:

forming a first solution of a biocompatible, hydrophilic first component selected from the group consisting of a biopolymer, a synthetic polymer and monomers and prepolymers of said biopolymer and synthetic polymer;

forming a second solution of aged first component and monomers and prepolymers of said biopolymer and synthetic polymer, and a second component selected from the group consisting of a biocompatible elastomer and monomers and prepolymers thereof in a common solvent;

forming a product selected from the group consisting of a film, fiber, bead and a mesh from the second solution; and

freeze drying the product to increase the mechanical strength thereof.

16. The method of claim 15, wherein the first component is methacrylated gelatin, the second component is HydroThane and the product is a methacrylated gelatin-HydroThane interpenetrating polymer network.

17. The method of claim 16, wherein the methacrylated gelatin-HydroThane interpenetrating polymer network is formed into a film, and the film is freeze-dried at -70°C, whereby the mechanical strength of the film is increased.

18. The method of claim 7, including the steps of:

subjecting gelatin to methacrylation to produce methacrylated gelatin;

forming a concentrated solution of the methacrylated gelatin;

aging the concentrated solution of the methacrylated gelatin for 1 to 3 weeks;

diluting the aged concentrated solution to yield an aged dilute solution of methacrylated gelatin;

mixing the aged dilute solution and a solution of HydroThane and

effecting cross-linking to produce a methacrylated gelatin-HydroThane interpenetrating polymer network.

19. The method of claim 18, wherein the concentrated solution has a concentration of 18 wt% methacrylated gelatin, and the dilute solution has a concentration of 7.5 wt% methacrylated gelatin.